Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

DRAFT
Conditional Major, Operating
Permit: F-08-006
Mallinckrodt Baker, Inc.
7001 Highway 68 Bypass
Paris, KY 40361
June 24, 2008
Ralph Gosney, P.E., Reviewer

SOURCE ID:	21-017-00015
AGENCY INTEREST:	294
ACTIVITY:	APE20080001

SOURCE DESCRIPTION:
Mallinckrodt Baker, Inc. owns and operates a chemical purification and packaging facility located at 7001 Highway 68 Bypass, Paris, Kentucky. The source manufactures, packages, stores, and distributes multiple grades of solvents, acids, solutions, and bonded phase products. The significant emission units at the Paris facility include railcar and tank truck unloading, solvent and ether distillation, solvent and ether packaging, acid packaging, dry material packaging, two steam boilers, a fire-tube boiler, and fugitive emissions. Insignificant activities include various natural gas-fired space heaters, two small offset printing operations, solution blending and packaging, flammable solutions packaging, "hazard room" operations, FACSFlow^{TM} mixing, acid storage tanks, a cooling tower, and various fuel oil and solution storage tanks as well as other operations.

The emissions from this source include: volatile organic compounds (VOCs) and hazardous air pollutants (HAPs) from solvent/acid handling operations; particulate matter (PM/PM10) and particulate HAP emissions from dry material handling operations; particulate matter (PM/PM10), HAPs, carbon monoxide (CO), nitrogen oxide (NOx), VOCs, and sulfur dioxide (SO_2) from combustion units. All emissions from the combustion units are uncontrolled. PM/PM10 and particulate HAP emissions from dry material handling operations are controlled by either fabric filter baghouses or cartridge type dust collectors. The VOC and HAP emissions from the solvent/acid handling operation EP 12/15(--) (Automatic and Hand Filling Liquid Acids) are controlled by a packed-bed scrubber (Caustic Scrubber #1). The aqueous solution blending and packaging operation, which is listed as an insignificant activity in the permit, is also controlled by Caustic Scrubber #1. Additionally, a hydrofluoric acid storage tank is controlled by a venturi scrubber and a hydrochloric acid storage tank is controlled by a packed-bed scrubber (Caustic Scrubber #2). The hydrofluoric acid tank is listed as an insignificant activity in the permit.

An operating permit issued to Mallinckrodt Baker on June 17, 1983 (No.: O-83-110) is the most recent operating permit on record. Since that time, several other construction permits have been issued to this source, with the most recent being C-82-033 (Revision 2) issued by the Division on July 29, 1994. The 1983 operating permit; various construction permits; and other construction/operating permit applications submitted since 1994, including a source wide operating permit application of February 1996 that was resubmitted on May 9 2006 and January 14, 2008, need to be consolidated and updated to comply with current federal and State air regulations.

The potential to emit (as defined in 401 KAR 52:001, Section 1 (192)) of VOC and PM10 for this source are each greater than one hundred (100) tons per year. Additionally, the potential to emit of a single HAP and combined HAPs are greater than 10 and 25 tons per year, respectively; therefore, the source is a major source under 401 KAR 52:020, *Title V Permits*. The source has requested to take voluntary limits on the source-wide emissions of VOC, PM10, single HAPs, and combined HAPs to less than Title V major source thresholds. As such, the source will be issued a conditional major operating permit under 401 KAR 52:030, *Federally Enforceable Permits for Non-major Sources*. This is the initial conditional major permit for this source.

COMMENTS:

Existing Approvals:
A history of permit applications submitted to the Division and air permit approvals issued by the Division is summarized below:

Application Description	Date Submitted	Permit Issued	Date Issued	Notes
Facility-Wide Operating Permit	3/31/1978	O-79-191	6/19/1979	-
Solvent Still #1 Construction Permit	2/10/1982	C-82-33	3/26/1982	-
Facility-Wide Operating Permit	8/13/1982	O-82-22	2/18/1983	Replaced O-79-191.
Nitric Acid Distillation System and Storage Tank Construction Permit	10/21/1982	C-83-05	12/28/1982	-
Nitric Acid Still/Tanks Operating Permit	4/11/1983	O-83-110	6/17/1983	Replaced O-82-22. Contains revoked hexane limits.
HF Tank Construction Permit	8/20/1986	-	-	10/15/1986 letter from the Division indicated no permit necessary.
Nitric Acid Tanks Construction Permit	5/18/1987	-	-	6/16/1987 letter from the Division indicated no permit necessary.
Nitric Acid Distillation Construction Permit	11/10/1987	-	-	-
Solvent Still #2 Construction Permit & Still #1 Update	3/6/1990	-	-	No permit necessary as per conversation with the Division.
Solvent Still #3 Construction Permit	11/14/1990	C-91-008	1/25/1991	-
Still Usage Flexibility Construction Permit	8/4/1993	C-82-033 (Rev. 1)	4/7/1994	Replaced C-82-033.
Heptane Distillation Construction Permit	6/6/1994	C-82-033 (Rev. 2)	7/29/1994	Replaced C-82-033 and C-82-033 (Rev. 1). Facility did not install heptane distillation.
Construction Permit to Upgrade Controls and Limit HAPs Below Major Source Thresholds	11/2/1994	-	-	4/28/1995 letter from the Division indicated no permit necessary.
Facility-Wide Operating	2/27/1996	-	-	-

Application Description	Date Submitted	Permit Issued	Date Issued	Notes
Permit				
Ultrex Construction Permit	6/13/1996	-	-	6/13/1996 letter from the Division indicated no permit necessary.
Facility-Wide Operating Permit (Resubmitted 2/27/1996 application)	5/9/2006	-	-	7/31/2006 letter from the Division indicated application was received.
Updated Still Limits Operating Permit	1/12/2006	-	-	-
Boiler Low Sulfur Fuel Oil #6 Construction Permit	11/3/2006	-	-	2/1/2007 letter from the Division indicated no permit necessary.

Equipment List and Descriptions:
The source consists of the following significant emissions units. Source insignificant activities, as defined in 401 KAR 52:030, Section 6, are listed in Section C of the permit.

Combustion Units

EP 01(--) **Indirect Heat Exchanger**
Description: Cleaver Brooks 100/600-300-15C boiler #1 for space heating and process heat

EP 02(--) **Indirect Heat Exchanger**
Description: Cleaver Brooks 100/600-300-15C boiler #2 for space heating and process heat

EP 03(--) **Indirect Heat Exchanger**
Description: Burnham CW-50-O-GP fire-tube boiler for process heat

Dry Materials Packaging

Dry materials packaging occurs in several areas at the plant: the Accurate Room (EP 05(--)), Bulk to Bulk Packaging Room (EP 07(--)), Cool Room (EP 08(--)), Poison Room (EP 09(--)), Clean Room/Dust & Stain Room (EP 10(--)), and Dry Salts Packaging (EP 11(--)). In each of these areas, except the Accurate Room, containers are filled with dry materials by hand, resulting primarily in particulate matter emissions and some particulate HAP emissions. In the Accurate Room, containers are filled via a dry crusher or a vibratory feeder. Dust from filling is captured using air-pickup ducts and routed to a particulate control device.

EP 05(--) **Accurate Room Vibratory Feeder/Crusher Feeder**

05(a) Vibratory Feeder
05(b) Crusher Feeder

EP 07(--)	**Bulk to Bulk Packaging Room/Accurate Hand Pack**
07(a)	Bulk to Bulk Packaging Room
07(b)	Accurate Hand Pack
EP 08(--)	**Cool Room**
08(a)	Cool Room Station 10
08(b)	Cool Room Station 11
08(c)	Cool Room Station 12
EP 09(--)	**Poison Room**
EP 10(--)	**Clean Room/Dust & Stain Room**
10(a)	Clean Room
10(b)	Dust & Stain Room
EP 11(--)	**Dry Salts Packaging**
11(a)	Dry Salts Pack Station #1
11(b)	Dry Salts Pack Station #2
11(c)	Dry Salts Pack Station #3
11(d)	Dry Salts Pack Station #4
11(e)	Dry Salts Pack Station #5

Acid Packaging

Containers are filled with acids either directly from bulk trucks or from the acid storage tanks in the acids packaging area. Bottles are filled using an automatic packaging system and drums and totes are filled at the bulk filling line. Bulk containers are filled at a single station. Additionally, up to eight side stations are used to transfer acids from drums and totes to smaller containers. Under normal operations, all emissions from the acid packaging area, with the exception of a single side station, are collected by air pickup ducts at individual work stations and routed to a caustic scrubber for control (EP 12(--)). The acid hood side station is vented to the atmosphere via a separate stack (EP 15(--)). Hydrofluoric (HF) acid and ammonium fluoride are handled and packaged in a separate room from other acids due to safety concerns. The HF room consists of three tanks that are used to mix HF solutions which are sent to either an automatic packaging line or a bulk filling station. Under normal operations, all emissions from the HF room are captured via air pickup ducts and routed to the same caustic scrubber for control (EP 12(--)).

EP 12/15(--)	**Automatic and Hand Filling Liquid Acids**
12(a)	Acid Autoline
12(b)	Acid Bulk Filler
12(c)	Peroxide Bulk Filler
12(d)	Mobile Stations (Maximum 8)
12(e)	HF Fill Line
12(f)	HF Drum Station
15(--)	Acid Hood Side Station

Solvent Packaging Area

Solvent can be packaged directly from bulk containers within the solvent packaging room. Bottles are filled in this room using one of two automatic filling lines. Additionally, solvent can be packaged into drums and totes in this room using one of three drum/tote stations or into 5-gallon pails at the pail filling station, which can involve loading or unloading clean drums or dedicated Returnable Drum System (RDS) containers. Finally, drums and totes of solvents can be repackaged into smaller containers at up to eleven mobile side stations. The lines that carry products from the unloading areas to the packaging lines and stations must be cleaned out whenever operators switch from packaging one product to another. In order to clean out the lines, operators first drain as much of the material remaining in the line into drums, which is either packaged elsewhere at the plant or shipped offsite as waste. When necessary, the lines are blown out using nitrogen at a flow rate of up to 6,000 cubic feet per hour for up to 15 minutes and followed by air at a flow rate of up to 3,000 cubic feet per hour for up to 5.75 hours.

Emissions from all operations in the solvent packaging room, with the exception of one mobile side station, are captured via an air pick-up system at each work station and routed to the atmosphere by a two speed fan via a single stack (EP 13(--)). The hazard hood side station is vented to the atmosphere via a separate stack (EP 14(--)).

EP 13/14(--)	**Solvent Packaging Room**
13(a)	Solvent Autoline #1
13(b)	Solvent Autoline #2
13(c)	Solvent
13(d)	Solvent Station #2 (Drums)
13(e)	Solvent Station #8 (Drums)
13(f)	Mobile Side Stations (Maximum 11)
14(--)	Solvent Hazard Hood

Solvent/Ether Packaging Area

Purified compounds are packaged in the ether/solvent packaging room. Bottles are filled in this room using one automatic filling line with semi-dedicated fill ports. Additionally, ether and other similar compounds can be transferred from a tank truck directly to the auto line, a drum filling station, two mobile side stations, which can involve loading or unloading clean drums or dedicated Returnable Drum System (RDS) containers. Emissions from the ether/solvent packaging room are captured and exhausted to the atmosphere through EP 17(--).

EP 17(--) Ether/Solvent Packaging Room

17(a)	Ether/Solvent Autofill Line
17(b)	Ether/Solvent Drum Filling Station
17(c)	Two Ether/Solvent Mobile Side Stations

Bulk Material Receiving

Bulk shipments are received at the facility via tank trucks, railcars, totes, or drums. Solvent, ether, acids, and other miscellaneous compounds are received via tank truck, totes, drums, or other containers. Only acetone and isopropyl alcohol are received via railcar. Materials received via tank truck are either transferred by nitrogen pressure or gravity fed from the tank trucks to pumps that then move the material to packaging areas, storage tanks (in the case of acids), or to one of three distillation systems. A nitrogen blanket is applied to all tank trucks to a pressure of 1 psi in order to control emissions from the tank trucks during unloading. Railcars are unloaded with a pressurized nitrogen blanket of 10 psi to control emissions as well.

Solvent and acid emissions occur when the tank trucks and railcars are depressurized after unloading. Therefore, both tank truck and railcar unloading are listed as significant activities in this permit.

EP 23(--) Rail Car Unloading

EP 24(--) Truck Unloading

Solvent and Ether Distillation

Individual solvent or ether compounds are processed through one of the three distillation systems at the facility to remove impurities (i.e., trace organics and other carriers) so that the resulting purified chemicals meet laboratory or specialty grade specifications. Mallinckrodt Baker performs process operations in a single-phase shift in which the raw material chemical that enters the distillation system is the same raw material that is produced for sale, only the purity is different. All three stills can operate in a batch process; however, Stills #2 and #3 can, and typically do, operate in a continuous manner. Each distillation unit at Mallinckrodt Baker includes the still pot, distillation column, condenser, reflux router, subcooler, two receivers, and other miscellaneous accessories.

EP 50(--) Solvent Still #1/Receivers #1 and #2

EP 55(--) Solvent Still #2/Receivers #3 and #4

EP 56(--) Solvent Still #3/Receivers #5 and #6

Fugitive Components

EP 59(--) Fugitives - Distillation/Packaging Area

Applicable Regulations:

(a) The requirements of 401 KAR 59:015, *New Indirect Heat Exchangers*, apply to indirect heat exchangers with a capacity of more than one (1) mmBtu/hr and less than 250 mmBtu/hr that commenced construction after April 9, 1972. The requirements of this rule apply to boilers EP 01(--), EP 02(--), and EP 03(--), which were each installed after April 9, 1972.

(b) Pursuant to 401 KAR 59:010, Section 1, *New Process Operations*, the requirements of this rule apply to each affected facility, associated with a process operation, which is not subject to another emission standard, with respect to particulate matter (PM), in 401 KAR Chapter 59 and which commenced on or after July 2, 1975. The requirements of this rule are included in the permit for:

(1) EP 05(--);
(2) EP 07(--);
(3) EP 08(--);
(4) EP 09(--);
(5) EP 10(--); and
(6) EP 11(--).

(c) 401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances*, is applicable to an emission unit which emits or may emit potentially hazardous matter or toxic substances, provided such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division for Air Quality. The requirements of this rule are potentially applicable to the following emission points:

(1) EP 12/15(--);
(2) EP 13/14(--);
(3) EP 17(--);
(4) EP 23(--);
(5) EP 24(--);
(6) EP 50(--);
(7) EP 55(--);
(8) EP 56(--); and
(9) EP 59(--).

The Division completed an internal toxics analysis for the facility in 1982 based on the requirements of 401 KAR 63:020. Additionally, the Paris facility submitted a facility-wide air toxics analysis to the Division in 1987 as part of an application to install nitric acid distillation operations (no longer in service), and again in 1992 for an operating permit revision. The air toxics analyses submitted by the Paris facility in 1987 and 1992 demonstrated the facility to be in compliance with the requirements of 401 KAR 63:021/401 KAR 63:022, and no specific emission limitations have been required in prior related operating and construction permits. Based on these prior results, and the fact that no increases in emissions have been requested during this permit review, the current configuration of the source, including the operation of air pollution control equipment as specified in the permit and the voluntary restriction on source wide emissions, shall result in compliance with 401 KAR 63:020. If the source alters process rates, material formulations, or any other factor that would result in an increase of toxic emissions or the addition of toxic emissions not previously evaluated by the Division, the source shall submit the appropriate application forms pursuant to 401 KAR 52:020, Section 3(1)(a), and modeling performed by the Division may be necessary to show that the facility will remain in compliance with 401 KAR 63:020.

(d) 401 KAR 50:005, which incorporates by reference 40 CFR Part 60, Subpart VV, *Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry*, applies to affected facilities in the synthetic organic chemicals manufacturing industry that commenced construction or modification after January 5, 1981. The list of chemicals produced by affected facilities is included under 40 CFR 60.489. Pursuant to 40 CFR 60.480(d)(2), distillation Stills #1 and #3 are not subject to the operating and emission standards of this rule (i.e., 40 CFR §60.482) since the design capacity of each still is less than 1,000 Mg/yr. Stills #1 (EP 50(--)) and #3 (EP 56(--)), which were constructed after January 5, 1981 and are used to distill chemicals listed in 40 CFR 60.489, are subject to only the recordkeeping/reporting requirements of 40 CFR 60.486(i) and 40 CFR 60.487. Still #2 (EP 55(--)), which was constructed after January 5, 1981, is not in VOC service since the still is used to process dichloromethane, which is not considered a VOC pursuant to 40 CFR 51.100(s)(1). Therefore, Still #2 is subject to only the recordkeeping/reporting requirements of 40 CFR 60.486(i), 40 CFR 60.486(j), and 40 CFR 60.487.

To ensure that Still #2 remains "not in VOC service" in order to preclude the applicability of the operating and emissions standards of 40 CFR Part 60, Subpart VV, *Standards of Performance for Equipment Leaks of VOC in Synthetic Organic Chemicals Manufacturing Industry*, the permittee has voluntarily requested the following operating limitation be included in the permit:

(1) For Still #2, the permittee shall not produce, as intermediate or final products, one or more of the chemicals listed in 40 CFR 60.489 in this still.

(e) 401 KAR 60:005, which incorporates by reference 40 CFR Part 60, Subpart NNN, *Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operation*, applies to affected facilities that are part of a process unit that produces any of the chemicals listed in 40 CFR 60.667 as a product, co-product, by-product, or intermediate, except for the exemptions listed in 40 CFR 60.660(c). According to 40 CFR 60.660(b)(2), an affected facility is defined as each combination of a distillation unit and the recovery system into which its vent stream is discharged, for which construction, modification, and reconstruction commenced after December 30, 1983. Mallinckrodt Baker purifies chemicals listed in 40 CFR 60.667 in the distillation units for sale as a product and each column can operate independently if supplied sufficient raw materials. Therefore, each unit meets the definition of a process unit. However, Still #1, identified as EP 50(--), was constructed before the applicability date of December 30, 1983 and no modification as defined at 40 CFR 60.14 has occurred at this still; therefore the requirements of this rule do not apply.

Please note: Permit No. C-82-033 (Revision 1) authorized the facility to implement a "flexible operational alternative" to the initial construction permit issued for Still #1. The original operating permit (C-82-033) was issued on March 26, 1982. The amended permit was requested to provide Mallinckrodt with the flexibility to purify any of the authorized products on each of Stills 1, 2, or 3. The only change that was made at the plant pursuant to the revised permit was a decrease in the nitrogen purge flow rate (i.e., nitrogen blanket). No physical changes to or changes in the method of operation of Still #1 were made as a result of this permit action. There were no other physical changes made at the plant and, other than the change in the nitrogen purge rate, there were no other changes in the method of operation at the plant.

"Modification" is defined at 40 CFR 60.14 to mean "any physical change or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the [Clean Air] Act…". Emission rate shall be expressed as kg/hr of any pollutant discharged into the atmosphere for which a standard is applicable." 40 CFR 60.14 (a) and (b).

The purge rate change that was implemented in the nitrogen blanketing system for the plant is not a "change in the method of operation" or an "operational change" to Still #1 and further it did not result in an increase in the emission rate of any pollutant subject to regulation under Subpart NNN. Still #1 was not "modified" (as defined in the NSPS regulations) because there were no physical changes to or changes in the method of operation of the still. Additionally, there was no increase in the emission rate. Furthermore, there have been no other physical changes or changes in the method of operation of Still #1 since Permit No. C-82-033 (Revision 1) was issued.

Still #2, identified as EP 55(--), and Still #3, identified as EP 56(--), were constructed after the applicability date of December 30, 1983; therefore, the requirements of NSPS Subpart NNN potentially apply to these units. This notwithstanding, pursuant to 40 CFR 60.660(c)(5), an affected facility with a design capacity for all chemicals produced with that unit of less than 1,000 Mg/yr (2,204,623 lb/yr) is exempt from all provisions of Subpart NNN, except the recordkeeping and reporting requirements in 40 CFR 60.665(j), 40 CFR 60.665(l)(6), and 40 CFR 60.665(n). Still #3 has a design capacity of less than 1,000 Mg/yr (2,204,623 lb/yr) and therefore is exempt from all provisions of this rule, except the recordkeeping and reporting requirements of 40 CFR 60.665(j), 40 CFR 60.665(l)(6), and 40 CFR 60.665(n).

Although Distillation Still #2 is potentially subject to 40 CFR Part 60, Subpart NNN because the design capacity for purification of dichloromethane exceeds the exemption threshold, dichloromethane is not a VOC pursuant 40 CFR 51.100(s)(1). As such, and pursuant to 40 CFR 60.660(c)(1), Still #2 is not subject to Subpart NNN since it does not produce a VOC and it is not considered as an "affected facility".

To ensure that Still #2 remains "not an affected facility" in order to preclude the applicability of 40 CFR Part 60, Subpart NNN, *Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operation*, for distillation still #2 the permittee has voluntarily requested the following operating limitation be included in the permit:

(1) For Still #2, the permittee shall not produce, as intermediate or final products, one or more of the chemicals listed in 40 CFR 60.667 in this still.

(f) 401 KAR 68, *Chemical Accident Prevention*, which incorporates by reference 40 CFR Part 68, *Chemical Accident Prevention Provisions*, apply to an owner or operator of a stationary source that has more than a threshold quantity of a regulated substance in a process as determined according to the procedures in 40 CFR 68.115. Mallinckrodt Baker stores chloroform, formaldehyde solutions, and ethyl ether, which are regulated substances under 40 CFR 68.130. Bulk tanker trucks are used to store all three of these chemicals at weights greater than applicable threshold quantities prior to unloading to either the packaging areas at the plant or one of the distillation columns.

(g) A Risk Management Plan was most recently submitted to U.S. EPA on June 18, 2004 for operations at the Paris facility. This plan described ethyl ether storage as the worst-case Program 1 process at the facility and chloroform storage as the worst-case Program 3 process at the facility.

The requirement to comply with the requirement of 401 KAR 68 is included in permit Section G.

Non-Applicable Regulations:

(a) 401 KAR 60:005, *Standards of Performance for New Stationary Sources*, which incorporates by reference 40 CFR Part 60, Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced after July 23, 1984*, is not applicable to any of the volatile organic liquid storage vessels at the source because the capacity of each storage vessel is less than 75 m^3 (19,812 gallons).

(b) 401 KAR 60:005, *Standards of Performance for New Stationary Sources*, which incorporates by reference 40 CFR Part 60, Subpart D, *Standards of Performance for Fossil-Fuel-Fired Steam Generators for which Construction is Commenced after August 17, 1971*, does not apply to Boilers EP 01(--), EP 02(--), and EP 03(--) because each boiler has a maximum heat input capacity of less than 250 mmBtu/hr.

(c) 401 KAR 60:005, *Standards of Performance for New Stationary Sources*, which incorporates by reference 40 CFR Part 60, Subpart Db, *Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units*, does not apply to Boilers EP 01(--), EP 02(--), and EP 03(--) because each boiler has a maximum heat input capacity of less than 100 mmBtu/hr.

(d) 401 KAR 60:005, *Standards of Performance for New Stationary Sources*, which incorporates by reference 40 CFR Part 60, Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*, applies to steam generating units for which construction, modification, or reconstruction commenced after June 9, 1989 and have a design heat input capacity of 100 mmBtu/hr or less but greater than or equal to 10 mmBtu/hr. Boilers EP 01(--) and EP 02(--) are not subject to the requirements of this rule because each boiler was installed prior to June 9, 1989 and has not undergone any modification or reconstruction, as defined in 40 CFR Part 60, Subpart A, since installation. Additionally, the fire-tube boiler EP 03(--) is exempt from the requirements of this rule because the design heat input capacity is 1.44 mmBtu/hr.

(e) 401 KAR 63:002, which incorporates by reference 40 CFR Part 63, Subparts F, G, and H, as specified below, which are collectively referred to as Hazardous Organic NESHAPs (HON), do not apply to any of the operations at this plant.

(1) 40 CFR Part 63, Subpart G, *National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater*;

(2) 40 CFR Part 63, Subpart F, *National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater*;

(3) 40 CFR Part 63, Subpart H, *National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks*.

Pursuant to 40 CFR 63.100, the provisions of Subparts F, G, and H apply to chemical manufacturing process units that meet the criteria specified in 40 CFR 63.100 (b)(1)-(3). As indicated by the applicant, according to 40 CFR 63.101, a *chemical manufacturing process unit* is defined as:

"…the equipment assembled and connected by pipes or ducts to process raw materials and to manufacture an intended product. A chemical manufacturing process unit consists of more than one unit operation. For the purpose of this subpart, chemical manufacturing process unit includes air oxidation reactors and their associated product separators and recovery devices; reactors and their associated product separators and recovery devices; distillation units and their associated distillate receivers and recovery devices; associated unit operations; associated recovery devices; and any feed, intermediate and product storage vessels, product transfer racks, and connected ducts and piping. A chemical manufacturing process unit includes pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors instrumentation systems, and control devices or systems. A chemical manufacturing process unit is identified by its primary product."

The Background Information Document (BID) for the HON states that "*processing of a chemical, as intended in the HON, involves one or more unit operations that change the physical or chemical characteristics of a raw material or an intermediate stream."*

This document also responds to a question that requests guidance on the applicability of HON to processes that physically change a listed HAP into a different form not involving a chemical reaction. The BID states that "*blending or repackaging of a finished product is, therefore, not a process subject to the HON."*

Mallinckrodt Baker operates three (3) distillation units, identified as Stills #1, #2 and #3, at the Paris facility. These stills are used to purify chemicals by removing trace impurities to arrive at laboratory grade chemical purity. No co-products or by-products are produced as intermediates or for sale as part of this distillation operation. Therefore, these operations are not considered to be chemical manufacturing process units (CMPU), as defined in the BID and as provided at 40 CFR 63.100(b)(1) and (b)(2) and at 40 CFR 63.101 for definitions of CMPU and "product"; therefore, the stills are not subject to the requirements of the HON.

(f) 401 KAR 63:002, which incorporates by reference 40 CFR Part 63, Subpart EEEE, *National Emission Standards for Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline)*; and Subpart FFFF, *National Emission Standards for Hazardous Air Pollutants for Miscellaneous Organic Chemical Production*, do not apply because the source has accepted limits such that it is not a major source of HAP emissions, as defined at 40 CFR 63.2. This determination is consistent with the decision made by the Division during the December 19, 2007 application meeting.

(g) The requirements of 40 CFR 64, *Compliance Assurance Monitoring*, do not apply to any emission points at this source because this source is approved to operate under a conditional major permit and, pursuant to 40 CFR 64.2(a), the requirements of this rule are applicable only to a source required to obtain a Title V (Part 70 or 71) permit.

(h) Mallinckrodt Baker has requested voluntary limits to preclude applicability of 401 KAR 52:020, *Title V Permits*. Compliance with these limits shall also preclude this source from being a major stationary source and the requirements of 401 KAR 51:017, *Prevention of Significant Deterioration of Air Quality*, are not applicable to this source.

Emission Factors:
The potential emissions from combustion operations (EP 01(--), EP 02(--), and EP 03(--)) are calculated based on U.S. EPA AP-42, Chapter 1.3 and Chapter 1.4 emission factors. The potential emissions from dry material handling operations (EP 05(--), EP 07(--), EP 08(--), EP 09(--), EP 10(--), and EP 11(--)) are calculated based on manufacturer's specifications for the control device associated with each emission point (outlet grain loading and exhaust flow rate). The potential emissions from solvent/acid handling operations (EP 12/15(--), EP 13/14(--), EP 17(--), EP 23(--), EP 24(--), EP 50(--), EP 55(--), and EP 56(--)) are calculated based on the chemical properties of each solvent/acid and mass balance techniques. The potential fugitive emissions from equipment leaks were calculated using the U.S. EPA's Equipment Leak Factor guidance for Correlation/Screening SOCMI Factors.

Type of Control and Efficiency:
All emissions from the combustion units are uncontrolled. Particulate emissions from the following dry material handling operations are each controlled by fabric filter baghouses with a manufacturer's estimated control efficiency of 99.0%: EP 05(--) (Accuracy Room Vibratory Feeder/Crusher Feeder); EP 07(--) (Bulk to Bulk Packaging Room/Accuracy Hand Pack); and EP 11(--) (Dry Salts Packaging). Particulate emissions from the following dry material handling operations are each controlled by cartridge type dust collectors with a manufacturer's estimated control efficiency of 95.0%: EP 08(--) (Cool Room); EP 09(--) (Poison Room); and EP 10 (Clean Room/Dust & Stain Room). VOC and HAP emissions from the solvent/acid handling operation EP 12/15(--) (Automatic and Hand Filling Liquid Acids) are controlled by a packed bed scrubber (Caustic Scrubber #1) with a manufacturer's estimated destruction efficiency of 95.0%. The aqueous solution blending and packaging operation, which is listed as an insignificant activity in the permit, is also controlled by Caustic Scrubber #1. A hydrofluoric acid storage tank, listed under insignificant activities in the permit, is controlled by a venturi scrubber with a manufacturer's estimated control efficiency of 90.0%. A hydrochloric acid storage tank, listed in Section B of the permit, is controlled by a packed-bed scrubber (Caustic Scrubber #2) with a manufacturer's estimated control efficiency of 90.0%.

EMISSION AND OPERATING CAPS DESCRIPTION:
To preclude the applicability of 401 KAR 52:020, *Title V Permits*, the source-wide emissions shall not equal or exceed the following limits on a twelve (12) consecutive month basis:

(a) Particulate matter with a diameter of less than or equal to 10 microns (PM10) emissions: 90 tons per year;
(b) Volatile organic compound (VOC) emissions: 90 tons per year;
(c) Single hazardous air pollutant (HAP) emissions: 9.0 tons per year; and
(d) Combined hazardous air pollutant emissions: 22.5 tons per year.

This source is a chemical processing plant and it is one of the 28 listed source categories at 401 KAR 51:017, *Prevention of Significant Deterioration of Air Quality*. Therefore, compliance with the above specified permit limits shall also preclude this source from being a major stationary source and the requirements of 401 KAR 51:017, *Prevention of Significant Deterioration of Air Quality*, are not applicable to this source.

In order to make the conditional major/synthetic minor VOC and HAP emission limits practically enforceable, the permittee has voluntarily requested the following production limits:

(a) For the Solvent Packaging Area (EP 13/14(--)), the following operating limitations shall apply:

(1) Dichloromethane packaging in the solvent packaging area shall not exceed 5,529,420 pounds per twelve (12) consecutive month period;
(2) Packaging of total VOCs or total HAPs, other than dichloromethane, at the mobile side stations, 5-gallon pail filling station, or drum/tote stations in the solvent packaging area shall not exceed 30,850,000 pounds per twelve (12) consecutive month period; and
(3) Packaging of total VOCs or total HAPs, other than dichloromethane, on the two (2) autofill stations in the solvent packaging area shall not exceed 22,212,000 pounds per twelve (12) consecutive month period.

(b) For the Ether/Solvent Packaging Area (EP 17(--)), the following operating limitations shall apply:

(1) Packaging of dichloromethane at the mobile side stations and drum filling station in the ether/solvent packaging area shall not exceed 1,105,884 pounds per twelve (12) consecutive month period; and
(2) Packaging of total VOCs or total HAPs, other than dichloromethane, at the mobile side stations and drum filling station in the ether/solvent packaging area shall not exceed 3,755,000 pounds per twelve (12) consecutive month period.

(c) For Stills #1, #2, and #3 (EP 50(--), EP 55(--), and EP 56(--)), the following operating limitations shall apply:

(1) At no time shall Still #1 perform more than 12 clean-up cycles after dichloromethane processing per twelve (12) consecutive month period;
(2) At no time shall Still #2 process any other HAP besides dichloromethane; and
(3) At no time shall Still #3 process dichloromethane.

The permittee shall continue to use particulate control devices at relevant emission points specified in the permit in order to comply with the respective unit emission limits, and the conditional major PM10 emission limit. Related enforceable monitoring, record keeping and reporting requirements are included in the permit.

Note: In order to allow for flexibility in using different liquid fuels in the indirect heat exchangers (as well as natural gas), the permittee has requested the following limitations to preclude the applicability of 401 KAR 52:020, *Title V Permits*:

(a) Sulfur content weight percentage for No. 2 fuel oil $\leq$ 0.5%;
(b) Sulfur content weight percentage for No. 4 fuel oil $\leq$ 1.0%;
(c) Sulfur content weight percentage for No. 6 fuel oil $\leq$ 1.2%; and
(d) For any combination of fuels, emissions of sulfur dioxide (SO_2) from the boilers shall not exceed 90.0 tons during any twelve (12) consecutive month period.

PERIODIC MONITORING:

(a) The permittee shall survey each stack and perform a visible emissions observation once per calendar month for the boilers (EP 01(--), EP 02(--), EP 03(--)) (when burning liquid fuels) and once per calendar week for dry material handling operations (EP 05(--), EP 07(--), EP 08(--), EP 09(--), EP 10(--), and EP 11(--)). If no visible emissions are observed then no further action is required. If visible emissions are observed, the permittee shall perform an EPA Reference Method 9 reading for emission points of concern within 24 hours of observing visible emissions.

(b) The permittee shall monitor and record monthly and twelve (12) month consecutive total throughput rates and emission rates (tons of VOC, individual HAPs including dichloromethane, and combined HAPs) for the following operations:

(1) Solvent Packaging Area (EP 13/14(--)) including packaging, mobile side stations, 5-gallon pail filling station, drum/tote stations, two (2) autofill stations, and solvent hazard hood;
(2) Ether/Solvent Packaging Area (EP 17(--)) including packaging, mobile side stations and drum filling station, and one (1) autofill station;
(3) Stills #1, #2, and #3 (EP 50(--), EP 55(--), and EP 56(--));
(4) Automatic and Hand Filling Liquid Acids (EP 12/15(--));
(5) Rail Car Unloading (EP 23(--));
(6) Truck Unloading (EP 24(--)); and
(7) Fugitives - Distillation/Packaging Area (EP 59(--)).

(c) The permittee shall monitor and record monthly and twelve (12) month consecutive total throughput rates and emission rates (tons of PM10) for the following operations:

(1) Accurate Room Vibratory Feeder/Crusher Feeder (EP 05(--));
(2) Bulk to Bulk Packaging Room/Accurate Hand Pack (EP 07(--));
(3) Cool Room (EP 08(--));
(4) Poison Room (EP 09(--));
(5) Clean Room/Dust & Stain Room (EP 10(--));
(6) Dry Salts Packaging (EP 11(--)); and
(7) Indirect Heat Exchangers (EP 01(--), EP 02(--), and EP 03(--)).

(d) The permittee shall monitor and record monthly and twelve (12) consecutive month total fuel oil (No. 2, No. 4, and No. 6) and natural gas usage rates and sulfur dioxide (SO_2) emission rates (tons) for the indirect heat exchangers.

OPERATIONAL FLEXIBILITY:
None

CREDIBLE EVIDENCE:
This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.